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at the same time is very unusual. March was the most active month since last July with a daily average of 3.0 groups and with but two spotless days. During April there were thirteen consecutive spotless days, which was the longest completely quiescent period since the time of the last minimum. The average number of groups observed daily during April was 1.4.

Groups No. 1948 and 1949 were of especial interest because of the coalescence of the following member of No. 1948 with the preceding member of No. 1949. On March 2, both spots were large and although close together were still distinctly separate. The following member of No. 1948, of negative polarity, was north and slightly west of the preceding member of No. 1949 which was of positive polarity. By March 3 these two spots had coalesced so that they appeared as a single spot with large irregular penumbra and several umbræ, the northern umbræ being negative and the southern positive. This formation remained practically unchanged until the groups disappeared around the west limb. On account of their earlier appearance the classification as two groups was maintained although after March 3 the following member of No. 1948 and the preceding member of No. 1949 were different parts of the same spot.

GENERAL NOTES

Percival Lowell. "An Afterglow" by Louise Leonard. (A Review):*—In proportion as we acquire a more profound and intelligent knowledge of history, we should accord an even larger place to the study of men and their work—through written biographies. The volume "An Afterglow," while it is not a biography in the technical sense, fulfills a want and occupies a place unique in the literature of the history of astronomy.

To review a biographical study of a man whom one knows only by his work and writing, is quite a distinct task from reviewing that of a man whom one knows personally. The reviewer in this case did not know Lowell personally, but did know of his work and of its worth to the scientific world. He occupies an epoch-making place in astronomical history.

The book "Afterglow" reveals to us a life more fascinating than is usually bequeathed to mortal man. Few men of wealth would care to do what Lowell did. Astronomy, to Lowell, was both a passion for truth and beauty, and a duty. Nature was ever inviting and urging him on.

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*163 pages—Boston, Pub. by Richard C. Badger, 1921.

The letters quoted are wisely selected. They show not only the nature of the writer as he really was, but also the keen insight the recipient of the letters had of this nature. So intimately and vividly is his personality brought forth that one seems to be actually living, traveling and visiting with Lowell. Rarely is a book written in such a suggestive and vivid style. One finishes it with a feeling of regret that one cannot live on with Lowell. The purpose of the book is, of course, to portray the astronomer and scholar as he was, in his distinctive personality, and to show him as a man of many moods and interests. He continually discloses himself in these letters and impromptu scribblings. Even to the layman, outside of the realm of astronomy, the whole series make delightful and absorbing reading. These were written by Lowell to his secretary—on trains, from Boston, London, Italy—wherever he happened to be. Some are personal, some merely letters of instruction—but all are full of the joy that life had to give. Each reveals some new delight—a bud of spring, a tree or flower, a creeping creature or a star or planet giving forth a new fact.

Lowell was too human a man to cherish animosity towards those who disagreed with his ideas on the question of the physical features of Mars. Whether we agree with him or not, his work remains to perpetuate his idealism, his contribution to America's progress in science.

Miss Leonard's book introduces us to Lowell as scholar, scientist and friend. In doing this piece of work she has rendered a rare bit of service that this country greatly needs. We have too little biographical literature in America. England does her astronomers and scholars honor in more of these grateful memorials. There, memory is long—as long as the art of writing. Here we are too busy pushing on to accomplish things to pause for reflection or meditation—which really belong to the art of living. The brilliant galaxy of American astronomers —from Winthrop and Rittenhouse to Burnham and Pickering— is surely worthy of appreciative remembrance.

FREDERICK E. BRASCH.

Mean colour equivalents and hypothetical angular semidiameters of 734 stars brighter than the fifth magnitude and within 95° of the North Pole, by E. Hertzsprung, (A Review): —In this publication a compilation and discussion is given of different kinds of color-equivalents for bright stars, viz: the direct visual estimates of Lau, Krüger, Osthoff, Müller and Kempf, and Hagen, the effective temperature determinations of Wilsing, the color index, (photographic-visual magnitude) as given by King or derived by the author himself from a comparison of visual and photographic magnitudes, the measures of spectral intensity performed by Wilsing, Scheiner and Rosenberg, the photo-electric color-index of Guthnick, and the effective wave-lengths of Lindbad. After a careful discussion of the weights to be assigned to the different series of color-equivalents, these were all reduced to Wilsing's effective temperature (strictly speaking to his C_2/T where C_2 is Plank's constant), which, although not the most accurate series, is believed to be the most natural one. For 99% of all the 734 stars the quantity C_2/T is contained between 1 and 5. As the frequency curve of C_2/T shows a very sudden increase at about 1.1, the conclusion is drawn that there are no stars among those considered for which C_2/T is with certainty below 1, or for which T is higher than 14600° C on Wilsing's scale.

As the absolute magnitude is not known with certainty for all of these stars, and as at the same time it seemed desirable to search for a possible relation between C_2/T and absolute magnitude, the quantity $m + 5 \log \mu$ was taken as a substitute for M abs. A plot of C_2/T against this last quantity shows a figure bearing a crude resemblance to a map of North America. The absence of absolutely bright stars of intermediate color is clearly shown. Further considerations about the Cepheid variables lead the author to the conclusion that: "It appears tempting to consider *δ Cephei* variation as the normal, short-lasting, intermediate stage between the bright yellow and the bright white stars, but, of course, such an hypothesis without further evidence of its correctness is of but little value."

From the knowledge that our Sun radiates approximately, both quantitatively and qualitatively, as a black body, Hertzsprung calculated hypothetical angular diameters for stars of known apparent magnitude and color, as early as 1906. Correcting the previously derived formulæ by means of the measured diameters of *α Orions* and *α Bootis* the following formula for the hypothetical semidiameter ρ is derived:

$$5 \log \sin \rho = -43.44 + 2.3 \left(\frac{C_2}{T} \right)^{.93} - m$$

where m is the visual magnitude.

Among the larger hypothetical angular diameters which it

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[1] *Annalen van de Sterrewacht te Leiden*, **14**, 1, 1922.

may be possible to measure in the near future, we note those of:

	″		″
β *Androm.*	0.016	β *Gem.*	0.013
γ *Androm.*	14	40 *Lyncis*	12
α *Arietis*	10	μ *Urs. Maj.*	14
η *Persci*	12	β *Urs. Min.*	16
α *Ceti*	14	δ *Ophiuchi*	13
ρ *Peisci*	12	α *Herculis*	13
α *Tauri*	35	γ *Draconis*	18
ι *Aurigac*	12	γ *Aquilae*	13
α *Aurigae*	11	ξ *Cygni*	10
119 *Tauri*	13	ε *Pegasi*	13
η *Gem.*	16	μ *Cephei*	15
μ *Gem.*	13	β *Pcgasi*	18

W. L.